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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,299	05/04/2006	Hazuki Okabayashi	P29851	6791
52123	7590	07/30/2008		
GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191				
EXAMINER				
CHERY, MARDOCHIEE				
ART UNIT		PAPER NUMBER		
2188				
NOTIFICATION DATE		DELIVERY MODE		
07/30/2008		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com
pto@gbpatent.com

Office Action Summary

Application No.

10/578,299

Applicant(s)

OKABAYASHI ET AL.

Examiner

MARDOCHEE CHERY

Art Unit

2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SI/02)
Paper No(s)/Mail Date 8/04/06 and 7/06/07
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This Office action is a reply to applicant's communication filed on April 27, 2008 in response to the Office action mailed on December 28, 2007. Applicant's remarks and amendments to the claims were considered with the results that follow.
2. Claims 1-8 remain pending.
3. The Double patenting rejection of claims 1-8 is withdrawn in view of the remarks filed on April 27, 2008.

Response to Arguments

4. Applicant's arguments filed on April 27, 2008 have been fully considered but they are not persuasive.

Applicant's representative argues on page 4 of the remarks that MASATOSHI does not disclosed "a cache entry having a caching termination attribute, in addition to a dirty flag, is written back to the main memory, the caching termination attribute being added by an addition unit of the cache memory, and the addition unit and the process for adding a caching termination attribute to a cache entry".

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant

relies (i.e., "a cache entry having a caching termination attribute, in addition to a dirty flag, is written back to the main memory, the caching termination attribute being added by an addition unit of the cache memory, and the addition unit and the process for adding a caching termination attribute to a cache entry") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Additionally, the claims do not positively recite "an addition unit adding a caching termination attribute to each cache entry", rather "an addition unit operable to add a caching termination attribute". Such limitation does not result in any structural difference between the claimed invention and the prior art. Finally, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of or operable to perform the intended use, then it meets the claim. See, e.g., *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963) (The claims were directed to a core member for hair curlers and a process of making a core member for hair curlers. Court held that the intended use of hair curling was of no significance to the structure and process of making.); *In re Sinex*, 309 F.2d 488, 492, 135 USPQ 302, 305 (CCPA 1962) (statement of intended use in an apparatus claim did not distinguish over the prior art apparatus). A recitation of the intended use of the claimed invention must result in a structural difference

between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If a prior art structure is capable of performing the intended use as recited in the preamble, then it meets the claim. See, e.g., *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997). See also MPEP § 2112 - § 2112.02. MPEP 2114.

In view of the foregoing, the rejection of claims 1-8 under 35 U.S.C. 102 and 35 U.S.C. 103 is maintained as in the Office action mailed on December 28, 2008.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 2, 5, 6 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Masatoshi (JP 06-309231).

As per claim 1, MASATOSHI discloses a cache memory comprising: an addition unit operable to add, to each cache entry holding line data, a caching termination attribute indicating whether or not caching of the cache entry is allowed to be terminated [Fig. 1; pars. 0018, 0021, 0022, 0023]; a selection unit operable to select a cache entry

that has been added with a caching termination attribute indicating that caching is allowed to be terminated, and has been set with a dirty flag indicating that the cache entry has been written into [pars. 0019, 0021-0023]; and a write back unit operable to write back, to a memory, line data of the selected cache entry, regardless of an occurrence of a cache miss [Abstract; par. 0020].

As per claim 2, MASATOSHI discloses said adding unit includes: a holding unit operable to hold an address range specified by a processor; a search unit operable to search for a cache entry holding line data within the address range held in said holding unit [par. 0018]; and a setting unit operable to set, to the searched-out cache entry, the caching termination attribute indicating that caching is allowed to be terminated [Abstract].

As per claim 5, though MASATOSHI discloses said addition unit includes: an instruction detection unit operable to detect execution, by a processor, of a store instruction having, as instruction details, addition of the caching termination attribute indicating that caching is allowed to be terminated, and writing of data [pars. 0021-0023]; and a setting unit operable to set the caching termination attribute to a cache entry that has been written into in accordance with the detected instruction [Fig. 1, S1-S8].

As per claim 6, MASATOSHI discloses said write back unit is operable to write

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back data of a cache entry to the memory, when a memory bus has an idle cycle [par. 0019].

As per claim 8, the rationale in the rejection of claim 1 is herein incorporated.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Masatoshi (JP 06-309231) in view of Yasuto (JP 08-069417).

As per claim 3, MASATOSHI discloses said search unit includes: a first conversion unit operable, in the case where a start address of the address range held in said holding unit indicates a point midway through line data, to convert the start address into a start line address indicating a start line included in the address range [par. 0020];

Though MASATOSHI discloses converting the start address into a start line address indicating a start line included in the address range, MASATOSHI does not explicitly disclose a second conversion unit operable, in the case where an end address of the address range held in said holding unit indicates a point midway through line

data, to convert the end address into an end line address indicating an end line included in the address range; and a judgment unit operable to judge whether or not there exist cache entries holding data corresponding to respective line addresses from the start line address to the end line address.

YASUTO discloses a second conversion unit operable, in the case where an end address of the address range held in said holding unit indicates a point midway through line data, to convert the end address into an end line address indicating an end line included in the address range [Abstract]; and a judgment unit operable to judge whether or not there exist cache entries holding data corresponding to respective line addresses from the start line address to the end line address [Abstract] to improve the performance of a computer system by preventing unnecessary writing to a memory block of low-order level (Abstract).

Thus, it would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify the system of MASATOSHI to include converting the end address into an end line address indicating an end line included in the address range and judging whether or not there exist cache entries holding data corresponding to respective line addresses from the start line address to the end line address since this would have improved the performance of a computer system by preventing unnecessary writing to a memory block of low-order level (Abstract) as taught by YASUTO.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Masatoshi (JP 06-309231) in view of Tamotsu (JP 61-016348).

As per claim 4, though MASATOSHI discloses the cache entry that has been added with the caching termination attribute indicating that caching is allowed to be terminated, MASATOSHI does not explicitly teach a replacement unit operable, when a cache miss occurs, to select, as a subject for replacement, the cache entry that has been added with the caching termination attribute indicating that caching is allowed to be terminated.

TAMOTSU discloses a replacement unit operable, when a cache miss occurs, to select, as a subject for replacement, the cache entry that has been added with the caching termination attribute indicating that caching is allowed to be terminated [Abstract] to reduce the overhead for expulsion of old blocks from a buffer memory at a block replacement time (Abstract).

Thus, it would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the system of MASATOSHI to include a replacement unit operable, when a cache miss occurs, to select, as a subject for replacement since this would have been able to reduce the overhead for expulsion of old blocks from a buffer memory at a block replacement time (Abstract).

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Masatoshi (JP 06-309231) in view of Pateru et al. (JP 09-259036).

As per claim 7, though Masatoshi discloses each cache entry has a dirty flag and a write back unit to write back to the memory the cache entry selected by the selection unit, MASATOSHI does not explicitly teach each cache entry has a dirty flag for each of a plurality of sub-lines making up one line, and said write back unit is operable to write back, to the memory, only a dirty sub-line.

PATERU discloses each cache entry has a dirty flag for each of a plurality of sub-lines making up one line, and said write back unit is operable to write back, to the memory, only a dirty sub-line [Abstract] in order to maintain consistency inside a write-back cache memory (Abstract).

Thus, it would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the system of MASATOSHI to include with each cache entry a dirty flag for each of a plurality of sub-lines making up one line, and a write back unit operable to write back, to the memory, only a dirty sub-line as taught by PATERU since this would have facilitated maintaining consistency inside a write back cache memory (Abstract).

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

JP 2001-005725 discloses said addition unit includes: an instruction detection unit operable to detect execution, by a processor, of a store instruction having, as instruction details, addition of the caching termination attribute indicating that caching is allowed to be terminated [Abstract].

TAMOTSU discloses a cache memory with an addition unit where each cache entry holds a cache termination attribute indicating if the cache entry is allowed to be terminated, and a selection unit selecting a cache entry that has been added with the caching termination attribute.

13. When responding to the office action, Applicant is advised to clearly point out the patentable novelty that he or she thinks the claims present in view of the state of the art

disclosed by references cited or the objections made. He or she must also show how the amendments avoid such references or objections. See 37 C.F.R. 1.111(c).

14. When responding to the Office action, Applicant is also advised to clearly point out where support, with reference to page, line numbers, and figures, is found for any amendment made to the claims.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mardochee Chery whose telephone number is (571) 272-4246. The examiner can normally be reached Monday to Friday, from 8:30A-5:00P.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung Sough can be reached Monday to Friday, at (571) 272-6799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hyung S Sough/
Supervisory Patent Examiner, Art Unit 2188
07/25/08

July 24, 2008

Mardochee Chery
Examiner
AU: 2188